

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1 to 20 (Cancelled).

21. (Currently Amended) A method of assessing the effectiveness of a neurological or psychiatric treatment of a disorder in a mammalian subject, the method comprising:

acquiring a first proton relaxation measurement for a selected region of the brain in a magnetic resonance imaging (MRI) procedure;

administering to the subject a neurological or psychiatric treatment;  
acquiring a second proton relaxation measurement for the selected region of the brain in an MRI procedure; and

detecting any difference between the first proton relaxation measurement and the second proton relaxation measurement, wherein a difference indicates that the treatment has an effect on the subject.

22. (Original) The method of claim 21, wherein the subject is a human patient.

23. (Original) The method of claim 21, wherein the subject is an animal.

24. (Original) The method of claim 21, wherein a decrease in a T2 measurement indicates that the treatment has an effect on the subject.

25. (Currently Amended) A method of assessing the effectiveness of a neurological or psychiatric treatment of a disorder in a subject, the method comprising:

acquiring a first, pre-treatment proton relaxation measurement for a selected region of the brain in a magnetic resonance imaging (MRI) procedure;

administering to the subject a pre-treatment challenge that alters a physical or chemical property of cell membranes in the brain of the subject;

acquiring a second pre-treatment proton relaxation measurement for the selected region of the brain in an MRI procedure;

detecting any difference between the first pre-treatment proton relaxation measurement and the second pre-treatment proton relaxation measurement, thereby obtaining a pre-treatment challenge result;

administering a neurological or psychiatric treatment to the subject;

acquiring a first, post-treatment proton relaxation measurement for a selected region of the brain in an MRI procedure;

administering to the subject a post-treatment challenge that alters a physical or chemical property of cell membranes in the brain of the subject;

acquiring a second post-treatment proton relaxation measurement for the selected region of the brain in an MRI procedure;

detecting any difference between the first post-treatment proton relaxation measurement and the second post-treatment proton relaxation measurement, thereby obtaining a post-treatment challenge result; and

comparing the pre-treatment challenge result with the post-treatment challenge result, wherein a difference between the pre-treatment challenge result and the post-treatment challenge result indicates that the treatment has an effect on the subject.

26. (Cancelled)

27. (New) The method of claim 21, wherein the disorder is a membrane fluidity-related disorder.

28. (New) The method of claim 21, wherein the disorder is selected from the group consisting of bipolar disorder, alcoholism, Alzheimer's disease, major depression, and schizophrenia.

29. (New) The method of claim 21, wherein the disorder is bipolar disorder.

30. (New) The method of claims 21, wherein the disorder is Alzheimer's disease.

31. (New) The method of claim 21, wherein the first and second proton relaxation measurements are a T1 value or a T2 value.

32. (New) The method of claim 21, wherein the MRI procedure comprises using incrementally increased or decreased echo times (TE), repetition times (TR), or inversion times (TI).

33. (New) The method of claim 21, wherein the MRI procedure comprises acquiring at least 16 images, using an echo planar, spin echo imaging sequence.

34. (New) The method of claim 21, wherein the treatment is a candidate psychiatric drug.

35. (New) The method of claim 21, wherein the treatment is a candidate neurological drug.

36. (New) The method of claim 21, wherein the treatment is a known psychiatric drug.

37. (New) The method of claim 21, wherein the treatment is a known neurological drug.